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14. ABSTRACT

The **purpose** of this study was to enhance the stability of the military nursing corps by providing evidence to inform policy decisions by conducting a survey of Air Force nurses to examine the positive and negative impact of deployment. The study **design** was a descriptive, quantitative survey method. This study follows the instrument development project that was conducted in the "Impact of Deployment on Nurse Retention" study (TSNRP proposal # N015-013, 2008). The study **methods** consisted of a written survey. The **sample** consisted of 143 Air Force active duty and reserve nurses who had deployed in the past 5 years from five different bases. The survey instrument for this study comes from the work completed in the first phase of this project (TSNRP proposal # N015-013, 2008). Most of the variables used in this analysis were Likert-type items and scales. **Data Analysis** consisted of descriptive statistics, correlations, and factor analysis. Factors were examined for their contribution as driving (positive) and restraining (negative) forces. Twenty individuals from five different Air Force bases offered comments that reiterated the survey items and therefore provided additional content validity for the type of items included. **Findings** included many positive effects of deployment related to the satisfaction felt from caring for troops, the military pride and honor felt from serving, public support/respect, increased self-confidence, and the knowledge of working with other services. Negative consequences were expenses, benefits, promotions, break from home/work responsibilities, being mentored, and opportunity in one's job assignment. Nurses indicated a need for post-deployment debriefing and counseling. Those reporting more positive aspects of deployment were more likely to intend to remain in the military. **Nursing Implications** of this study include an evidence base for identifying strategies that policymakers can adopt to augment the positive outcomes of deployment and mitigate the negative.

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FINAL REPORT

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ABSTRACT

The **purpose** of this study was to enhance the stability of the military nursing corps by providing evidence to inform policy decisions by conducting a survey of Air Force nurses to examine the positive and negative impact of deployment. The study **design** was a descriptive, quantitative survey method. This study follows the instrument development project that was conducted in the "Impact of Deployment on Nurse Retention" study (TSNRP proposal # N015-013, 2008). The study **methods** consisted of a written survey. The **sample** consisted of 143 Air Force active duty and reserve nurses who had deployed in the past 5 years from five different bases. The survey instrument for this study comes from the work completed in the first phase of this project (TSNRP proposal # N015-013, 2008). Most of the variables used in this analysis were Likert-type items and scales. **Data Analysis** consisted of descriptive statistics, correlations, and factor analysis. Factors were examined for their contribution as driving (positive) and restraining (negative) forces. Twenty individuals from five different Air Force bases offered comments that reiterated the survey items and therefore provided additional content validity for the type of items included. **Findings** included many positive effects of deployment related to the satisfaction felt from caring for troops, the military pride and honor felt from serving, public support/respect, increased self-confidence, and the knowledge of working with other services. Negative consequences were expenses, benefits, promotions, break from home/work responsibilities, being mentored, and opportunity in one's job assignment. Nurses indicated a need for post-deployment debriefing and counseling. Those reporting more positive aspects of deployment were more likely to intend to remain in the military. **Nursing Implications** of this study include an evidence base for identifying strategies that policymakers can adopt to augment the positive outcomes of deployment and mitigate the negative.

INTRODUCTION

The **purpose** of this study was to enhance the stability of the military nursing corps by providing evidence to inform policy decisions related to deployments, pay incentives, and individual and family support. A large-scale survey of Air Force nurses was conducted to examine the positive and negative impact of deployment. These impacts of deployment were examined in the context of their roles in mitigating the likelihood of Air Force nurses' intent to remain in military nursing careers or to leave military nursing.

Describe why the research was needed: This study contributes to an evidence base for identifying strategies that policymakers can adopt to augment the positive outcomes of deployment and mitigate those that are negative. The global war on terrorism and the required nursing response demands a current and comprehensive knowledge of the impacts of deployment on nursing retention. Knowledge of the positive and negative consequences of deployment gives nursing mentors and supervisors a basis for counseling nurses who are facing deployment. Being able to state, with evidence, that deployment gives nurses medical training as well as skills, leadership, mentoring, and decision making abilities that go beyond the stateside experience, is critical. Discussions with nurses about increased self-confidence, military pride, and public respect as unique internal rewards that may last a lifetime are part of the evidence gained from this study. In addition, recruitment and retention materials should emphasize these positive outcomes of deployment.

Three recent studies (Kashani, et al., 2010; Scannell-Desch & Doherty, 2010; Lang, et al., 2010) have each reported on the stress and burnout issues of military nurses. The consequences of these issues are directly related to job satisfaction and retention. Military nurses also face compassion fatigue and other mental health concerns (Kenny & Hull, 2008; Greene-Shortridge,

et al., 2007; and Stewart, 2009). Identifying the needs of military nurses may enable nursing supervisors and policymakers to improve career counseling, recruitment materials, deployment decisions, and, ultimately, retention.

Negative outcomes of deployment defined in this study can be used to determine which factors need to be investigated, and subsequently changed, to improve the deployment experience and thereby increase retention. In other cases, negative impacts may indicate stresses for which nurses need special training and preparation. Policy decisions related to timing, length, and frequency of deployment can be based on evidence from the findings of this study.

SCOPE OF THE STUDY

a. Specific aims of the study

Specific Aim 1: Conduct a large-scale survey to examine the positive and negative impact of deployment on military nurses.

Specific Aim 2: Model the interrelationships of positive and negative factors on military nursing satisfaction and intent to remain or leave military nursing careers.

Specific Aim 3: Synthesize evidence and provide recommendations for policy changes and incentives to improve retention of military nurses.

These aims were accomplished through research using an instrument developed in a previous TriService Nursing Research Program (TSNRP) study that surveyed military nursing officers in the U.S. Air Force about the positive and negative impacts of deployment. The impacts of deployment were examined in the context of their roles in mitigating the likelihood of intent to remain in military nursing careers or to leave military nursing.

b. Research questions/Hypotheses

Specific Aim 1

Research Question 1: What are the most common positive effects of deployment that influence Air Force nurses' intent to stay in the military?

Research Question 2: What are the most common negative effects of deployment that influence Air Force nurses' intent to stay in the military?

Research Question 3: What proportions of recently deployed Air Force nurses are considering or have made a decision on remaining in the military?

Research Question 4: How do the positive and negative impacts of deployment compare between active duty and reserve nurses?

Specific Aim 2

Research Question 5: What deployment factors are a part of a predictive model of Air Force nurses' intent to stay in the military?

Research Question 6: What antecedent variables (e.g., age, rank years of military service, and deployment characteristics such as number and length of deployments) influence the model for the intent to stay in the military?

Specific Aim 3

Research Question 7: What recommendations related to deployment are expressed by Air Force nurses?

RESEARCH PLAN

The study **design** was a descriptive, quantitative survey method. This study follows the instrument development project that was initiated in the "Impact of Deployment on Nurse Retention" study (TSNRP proposal # N015-013, 2008).

The study **methods** consisted primarily of a written survey (see Appendix A). Study methods were developed in consultation with Dr. Myong Kim, of Johns Hopkins University, who assisted with the participant letter, subject recruitment flyer and institutional review board (IRB) documents. In the process of IRB approvals for each base, Travis Air Force Base (AFB) hospital officials notified the principal investigator (PI) that an approval by the Air Force Survey Office was required. This required a Pentagon-level sponsor and delayed the study by 8 months.

The survey of nurses began with contacting designated base hospitals and air evacuation reserve units to arrange data collection. Based on the rotation of nurses for deployments, arrangements were made to visit each base at a time convenient for the senior nurse executive. The following bases were visited at two different times to maximize subject recruitment: Keesler AFB, Mississippi; Lackland AFB, Texas; and Eglin AFB, Florida. Data were also collected at Andrews AFB, Maryland and Travis AFB, California. The **sample** consisted of 143 Air Force active duty and reserve nurses who had deployed in the past 5 years.

Instrument Development in Previous Study: The survey instrument for this study comes from the work completed in the first phase of this work (TSNRP proposal # N015-013, 2008). The survey instrument (see Appendix A) was developed in a three-step process during the TSNRP study "Impact of Deployment for Military Nursing Retention." Step one consisted of focus groups of Air Force active duty and reserve nurses conducted at Eglin AFB and Lackland AFB that explored the positive and negative impacts of deployment. The focus groups consisted

of nurses who had recent deployment experience (within the last 6 years). The focus groups' answers were analyzed for content and combined with items extracted from the literature for use in the development of a structured survey instrument. Critique groups of nurses used a guideline form to examine the draft survey instrument and evaluate its feasibility, length, terminology, understanding, and format. Open-ended questions were included for additional comments. The consultant, Dr. Kim, reviewed the survey instrument during two intervals in its development and helped the research team with revisions.

DATA ANALYSIS

Data were cleaned carefully using a double entry system for proofing. There were few missing data. The missing data were treated with pair-wise deletion.

The analysis was further refined in research team conferences conducted before data collection began. Dr. Kim consulted on instrumentation and analysis. Dr. Randall Schumacker, of the University of Alabama, assisted in determining the analysis plan and provided suggestions before data were collected.

The data analysis plan was formulated in a collaborative effort with, Drs Kim and Schumacker and the research team, using the Statistical Package for the Social Sciences (SPSS).

Refinement of Scales and Reliability Analysis

In consultation with Drs. Kim and Schumacker, the data generated from the large-scale implementation were used first to finalize the psychometric assessments of the instruments and scales. It had been possible to give considerable attention to reliability and validity in phases 1 and 2.

Factors in the two ratings sections (1: positive/negative impact and 2: problems) of the survey were examined for their contribution as driving and restraining forces for comparison to the model. Policy decisions to strengthen positive factors and mitigate the negative factors can be developed by military leadership to improve retention.

Statistical Note

The final data were analyzed using descriptive and parametric techniques whenever possible. Most of the variables used in this analysis were Likert-type items and scales. These

variables do not meet the classic assumptions for parametric testing. However, it has been demonstrated that when 1) the number of cases is large, 2) intervals are relatively even, and 3) distributions are normal, most commonly used parametric statistics—including analysis of variance and Pearson's correlation and their derivatives—are quite robust. Empirical research has been used to demonstrate that there is rarely any substantial distortion when ordinal-level scale variables of the type frequently seen in educational research are used with parametric statistics.

Although non-parametric techniques might sometimes be more appropriate, the use of robust parametric statistics is helpful in situations where they can be interpreted meaningfully despite the infringement on assumptions. This is because more people understand these common statistical procedures and the interpretations of results based on their use.

Descriptive analysis of all items and scales was conducted to fully examine any outliers for data cleaning prior to further analysis.

Descriptive analysis included:

- A frequency distribution and range.
- A measure of central tendency (mean or median as appropriate) for ordinal and interval variables.
- A summary statement for each item and scale briefly describes its nature and assessing the normality of the distribution. It will also describe the missing data, identify any outliers, and identify the management of these issues.

Demographics of participants

The survey sample consisted of 143 Air Force nurses who have recently deployed. The following demographic measures describe the sample.

- Deployment since 2005: All subjects (100%) had deployed in the last 5 years. 47.2% reported 1 deployment, 33.1% reported 2 deployments, and 19.7% reported 3 or more deployments.
- Most recent deployment: 81.8% of the respondents reported deployments of 4 to 6 months. Only 4.2% reported a deployment of less than 4 months; 38.8% reported 4 months; 11.3% reported 5 months; 31.7% reported 6 months; 8.5% reported 7 months; and 14.1% reported 8 to 24 months. The range of deployments was 2 to 24 months (*M* = 5.5 months, *SD* = 2.5).
- Deployment overseas: 50.0% reported 1 one deployment overseas, 32.4% reported 2 deployments overseas, 10.6% reported 3 deployments overseas, 6.3% reported 4 to 9 deployments overseas, and one respondent did not deploy overseas. (*M* = 1.8, *SD* = 1.2).
- Years in the military: 14.7% had 5 or fewer years in the military and 15.4% had 20 years or more. *(Range* = 1 to 36, *M* = 13.6, *Mdn* = 14).
- Pay Grade: 1.4% were in pay grade O-1; 2.8% were in pay grade O-2; 40.6% were in pay grade O-3; 42% were in pay grade O-4; 11.2% were in pay grade O-5; and 2.1% were in pay grade O-6.
- Gender: 72.7% (*n* = 104) were female. 27.3% (*n* = 39) were male.
- Reserve or National Guard: 17.4% (*N* = 24) were reserve or National Guard, 82.6% (*n* = 114) were active duty, and 3.5% did not respond (individuals belonging to the reserve

forces and on active duty orders may not have been sure whether to report themselves as active duty or reserve).

Responsibilities

Many of the participants have substantial responsibility for one or more of the following:

- Children: 42% of respondents. Children living with them: 56.2% of respondents responsible for children had children living with them (*Mdn* = 1 child) and 3.7% of respondents responsible for children did not respond.
- Pets: 40.6% of respondents.
- Personal business: 32.2% of respondents.
- Elderly parents: 16.8% of respondents.
- Other categories of persons: 10.5% of respondents.

Interruptions

Deployment interrupted the professional development of a large proportion of the participants:

- 20.3% reported that deployment interrupted professional or military education.
- 23.2% reported that deployment interrupted college.
- 20.2% reported some other interruptions (a variety of interruptions were specified) .

Social support

Reported level of support from family, friends, and significant others (*N* = 141):

- Very Weak: 3.5% of respondents.
- Weak: 13.5% of respondents.

- OK: 16.3% of respondents.
- Strong: 23.4% of respondents.
- Very strong: 44.3% of respondents.

Correlation with intent to remain: There is a small correlation between level of support and intent to remain ($r = –.198$, $p = .019$)

Table 1 Description

Participants ranked the impacts of their most recent deployment experience. The positive effects of deployment were related to the satisfaction from caring for troops, the military pride honor felt from serving, public support/respect, increased self-confidence, and the knowledge of working with other services. Negative consequences were related to expenses, benefits, promotions, the break from home/work responsibilities, being mentored, and opportunity in one's job assignment. The following table lists responses ordered by mean (*M*) with the highest mean first, indicating the most negative impact. Lower means indicated a more positive impact.

The scoring of the positive/negative impacts was as follows:

1 = Very positive impact

2 = Somewhat positive impact

3 = No impact

4 = Somewhat negative impact

5 = Very negative impact

Table 1. Positive and negative impact ratings for most recent deployment experience.

With regard to the most recent deployment experience, what impact did the deployment have on the following:	Very positive impact	Somewhat positive impact	No impact	Some-what negative impact	Very negative Impact	Missing	*M* *N*eg to Pos	*SD*
Expenses	5.9% (*n* = 8)	23.7% (*n* = 33)	33.3% (*n* = 47)	3.8% (*n* = 51)	2.2% (*n* = 4)	0	3.07	0.96
Benefits	7.0% (*n* =10)	7.7% (*n* = 11)	83.2% (*n* = 119)	2.1% (*n* = 3)	0	0	2.80	0.59
Promotions	12.0% (*n* =17)	21.8% (*n* = 31)	61.3% (*n* = 87)	3.5% (*n* = 5)	1.4% (*n* = 2)	1	2.61	0.79
Break from home/work responsibilities	12.1% (*n* = 17)	40.4% (*n* = 57)	33.3% (*n* = 47)	8.5% (*n* = 12)	5.7% (*n* = 8)	2	2.55	1.0
Being mentored	13.3% (*n* = 19)	32.9% (*n* = 47)	43.4% (*n* = 62)	7.7% (*n* = 11)	2.8% (*n* = 4)	0	2.54	0.92
Opportunity in job assignment	17.6% (*n* = 25)	33.8% (*n* = 48)	41.5% (*n* = 59)	4.9% (*n* = 7)	2.1% (*n* = 3)	1	2.40	0.90
Income	20.3% (*n* = 29)	39.9% (*n* = 57)	25.2% (*n* = 36)	12.6% (*n* = 18)	2.1% (*n* = 3)	0	2.36	1.0
Performance evaluations	18.3% (*n* = 26)	33.8% (*n* = 48)	43.7% (*n* = 62)	4.2% (*n* = 6)	0	1	2.34	0.82
Awards & decorations	23.9% (*n* = 34)	37.3% (*n* = 53)	34.5% (*n* = 49)	3.5% (*n* = 5)	0.7% (*n* = 1)	1	2.20	0.87
Leadership	26.6% (*n* = 38)	39.2% (*n* = 56)	26.6% (*n* = 38)	4.9% (*n* = 7)	2.8% (*n* = 4)	0	2.18	0.98
Being a mentor	26.6% (*n* = 38)	45.5% (*n* = 65)	25.9% (*n* = 37)	1.4% (*n* = 2)	.7% (*n* = 1)	0	2.04	0.80
Taxes	34.8% (*n* = 49)	32.6% (*n* = 46)	29.1% (*n* = 41)	3.5% (*n* = 5)	0	2	2.01	0.88
Travel/cultural exposure	31.9% (*n* = 45)	51.1% (*n* = 72)	9.9% (*n* = 14)	6.4% (*n* = 9)	0.7% (*n* = 1)	2	1.93	0.86
Decision making skills	36.4% (*n* = 52)	44.1% (*n* = 63)	16.1% (*n* = 23)	1.4% (*n* = 2)	2.1% (*n* = 3)	0	1.89	0.87
Learning military systems	38.5% (*n* = 55)	38.5% (*n* = 55)	21.7% (*n* = 31)	1.4% (*n* = 2)	0	0	1.86	0.80
Desire to mentor others	38.7% (*n* = 55)	38.0% (*n* = 54)	21.8% (*n* = 31)	1.4% (*n* = 2)	0	1	1.86	0.80
Medical knowledge	38.5% (*n* = 55)	44.8% (*n* = 64)	13.3% (*n* = 19)	1.4% (*n* = 2)	2.1% (*n* = 3)	0	1.84	0.86
Respect for clinical expertise of others	40.3% (*n* = 56)	41.7% (*n* = 58)	12.9% (*n* = 18)	5.0% (*n* = 7)	0	4	1.83	0.84
Skills training	43.0% (*n* = 61)	40.1% (*n* = 57)	12.7% (*n* = 18)	2.1% (*n* = 3)	2.1% (*n* = 3)	1	1.80	0.89
Medical skills	46.2% (*n* = 66)	37.1% (*n* = 53)	12.6% (*n* = 18)	1.4% (*n* = 2)	2.8% (*n* = 4)	0	1.80	0.92
Chance to prove myself	46.4% (*n* = 66)	33.1% (*n* = 47)	20.4% (*n* = 29)	0	0	1	1.74	0.78

Table 1. Positive and negative impact ratings for most recent deployment experience.

With regard to the most recent deployment experience, what impact did the deployment have on the following:	Very positive impact	Somewhat positive impact	No impact	Some-what negative impact	Very negative Impact	Missing	*M* *N*eg to Pos	*SD*
Working with other services	44.8% (*n* = 64)	42.7% (*n* = 61)	11.9% (*n* = 17)	0.7% (*n* = 1)	0	0	1.69	0.71
Self confidence	46.5% (*n* = 66)	39.4% (*n* = 56)	12.7% (*n* = 18)	1.4% (*n* = 2)	0	1	1.69	0.75
Support/respect from the public	47.6% (*n* = 67)	42.0% (*n* = 60)	7.7% (*n* = 11)	1.4% (*n* = 2)	0	2	1.62	0.69
Honor to serve/military pride	68.8% (*n* = 97)	26.2% (*n* = 37)	2.8% (*n* = 4)	2.1% (*n* = 3)	0	2	1.38	0.65
Satisfaction from caring for troops	73.2% (*n* =104)	22.5% (*n* = 32)	2.8% (*n* = 4)	1.4% (*n* = 2)	0	1	1.32	0.60

Table 2 Description

Participants ranked the difficulties of the most recent deployment experience. Areas rated as **most problematic** were: lack of time off at one's deployed site, the stress of caring for many young causalities, experiencing high numbers of causalities, dealing with traumatic injuries, and deployed workload.

Areas rated as **least problematic** were: guilt related to leaving deployed co-workers behind, foreign attitudes toward the United States, understanding chain of command, guilt about those left behind at one's home station, and the relationship on return home with co-workers who did not deploy. The following table lists responses ordered by mean (*M*) with the highest mean first, indicating the most extreme problems.

The scoring of problem severity for the most recent deployment was as follows:

1 = Not a problem

2 = Somewhat a problem

3 = Very much a problem

4 = Extreme problem

Table 2. Rankings of problem severity for most recent deployment experience

Please rate the following in terms of your most recent deployment experience:	Not a problem	Somewhat a problem	Very much a problem	Extreme problem	Missing	*M*	*SD*
Lack of time off at deployed site	30.0% (*n* = 42)	32.9% (*n* = 46)	24.3% (*n* = 34)	12.9% (*n* = 18)	3	2.20	1.01
Stress of caring for so many young casualties	29.0% (*n* = 40)	39.1% (*n* = 54)	18.8% (*n* = 26)	13.0% (*n* = 18)	5	2.16	0.99
Experiencing high number of casualties	35.8% (*n* = 48)	30.6% (*n* = 41)	18.7% (*n* = 25)	14.9% (*n* = 20)	9	2.13	1.07
Dealing with traumatic injuries	36.2% (*n* = 50)	31.2% (*n* = 43)	16.7% (*n* = 23)	15.9% (*n* = 22)	5	2.12	1.08
Deployed workload	38.3% (*n* = 54)	31.2% (*n* = 44)	19.1% (*n* = 27)	11.3% (*n* = 16)	2	2.04	1.02
Lack of choices about deployment	42.4% (*n* = 59)	23.7% (*n* = 33)	23.0% (*n* = 32)	10.8% (*n* = 15)	4	2.02	1.05
Language barriers	28.6% (*n* =40)	47.9% (*n* = 67)	17.1% (*n* = 24)	6.4% ((*n* = 9)	3	2.01	0.85
Job stress on return (catching up)	35.2% (*n* = 50)	38.0% (*n* = 54)	20.4% (*n* = 29)	6.3% (*n* = 9)	1	1.98	0.90
Uncertainty about travel home	39.3% (*n* = 55)	35.7% (*n* = 50)	14.3% (*n* = 20)	10.7% (*n* = 15)	3	1.96	0.99
Difficulties in the process of traveling home	40.4% (*n* = 57)	34.0% (*n* = 48)	14.9% (*n* = 21)	10.6% (*n* = 15)	2	1.96	0.99
Stress related to combat risk	36.5% (*n* = 50)	43.8% (*n* = 60)	18.2% (*n* = 25)	1.5% (*n* = 2)	0	1.85	0.77
Marriage/relationship stress	40.8% (*n* = 53)	40.0% (*n* = 52)	15.4% (*n* = 20)	3.8% (*n* = 5)	13	1.82	0.83
Adjustment to returning to home	43.3% (*n* = 61)	42.6% (*n* = 60)	11.3% (*n* = 16)	2.8% (*n* = 4)	2	1.74	0.77
Combat stress	45.9% (*n* = 62)	37.0% (*n* = 50)	15.6% (*n* = 21)	1.5% (*n* = 2)	8	1.73	0.78
Match of background to deployed role	57.4% (*n* = 81)	19.1% (*n* = 27)	17.0% (*n* = 24)	6.4% (*n* = 9)	2	1.72	0.96
Length of deployment	48.6% (*n* = 69)	34.5% (*n* = 49)	14.1% (*n* = 20)	2.8% (*n* = 4)	1	1.71	0.81
Stress on those left behind at work	44.6% (*n* = 62)	43.2% (*n* = 60)	10.8% (*n* = 15)	1.4% (*n* = 2)	4	1.69	0.72
Terrorist threats	47.4% (*n* = 64)	40.7% (*n* = 55)	8.1% (*n* = 11)	3.7% (*n* = 5)	8	1.68	0.78
Communication with command at home station	52.9% (*n* = 73)	34.8% (*n* = 48)	8.7% (*n* = 12)	3.6% (*n* = 5)	5	1.63	0.79

Table 2. Rankings of problem severity for most recent deployment experience

Please rate the following in terms of your most recent deployment experience:	Not a problem	Somewhat a problem	Very much a problem	Extreme problem	Missing	*M*	*SD*
Adjustment to post-deployment job	57.0% (*n* = 81)	31.7% (*n* = 45)	7.7% (*n* = 11)	3.5% (*n* = 5)	1	1.58	0.78
Carrying a weapon	57.4% (*n* = 74)	27.9% (*n* = 36)	14.7% (*n* = 19)	0	14	1.57	0.74
Relationship on return home with co-workers who did not deploy	63.6% (*n* = 89)	28.6% (*n* = 40)	5.7% (*n* = 8)	2.1% (*n* = 3)	3	1.46	0.70
Guilt about those left behind at home station	65.0% (*n* = 89)	25.5% (*n* = 35)	8.0% (*n* = 11)	1.5% (*n* = 2)	6	1.46	0.71
Understanding chain of command	67.9% (*n* = 95)	24.3% (*n* = 34)	4.3% (*n* = 6)	3.6% (*n* = 5)	3	1.44	0.74
Foreign attitudes toward US	65.4% (*n* = 89)	28.7% (*n* = 39)	3.7% (*n* = 5)	2.2% (*n* = 3)	7	1.43	0.67
Guilt related to leaving deployed co-workers at overseas location	69.3% (*n* = 95)	24.8% (*n* = 34)	4.4% (*n* = 6)	1.5% (*n* = 2)	6	1.38	0.64

Participants attitudes about deployment

- 51.1% of respondents suggested that the ideal length for an overseas deployment is 4 months or less, 46.8 % suggested up to 6 months, and 2.1% suggesting 7 to 13 months.
- 7.1% of respondents suggested that the ideal length between overseas deployments is 6 months or less, 20.0% suggested 12 months, 18.5% suggested 14 to18 months, 47.2% suggest 20 to 24 months, and 7.0% suggested more than 2 years.

Table 3 Description

In response to the opportunities for post deployment counseling and debriefing, 10.7% of respondents (*n* = 15) had “no opportunity.” Forty-nine individuals (35 % of respondents) reported “minimal opportunity” for counseling. The nurses who ranked their opportunity for debriefing their mission as “excellent” was only 7.6% (*n* = 15) of the sample. Not all individuals responded to both questions.

Table 3. Ratings of opportunities for post-deployment counseling and briefing

Opportunities for post deployment counseling and debriefing.	No opportunity	Minimal	Sufficient	Excellent	No opinion
How would you rank your opportunity for post deployment psychological counseling? (*N* = 140)	10.7% (*n* = 15)	35.0% (*n* = 49)	38.6% (*n* = 54)	14.3% (*n* = 20)	1.4% (*n* = 2)
How would you rank your opportunity to debrief mission experience? (*N* = 142)	33.8% (*n* = 48)	29.6% (*n* = 42)	25.4% (*n* = 36)	7.6% (*n* = 15)	.7% (*n* = 1)

Table 4 Description

Nurses were asked about their choices related to overseas deployment. The responding nurses rated each of the choices according to their perceived importance. The most important choices were length of deployment and deployed job choice.

Table 4. Ratings of importance of choices related to overseas deployment

In terms of overseas deployment, how important are each of the following?	Not important	Somewhat Important	Very important	Extremely important	*N*o opinion
Choice of deployed location (*N* = 143)	7.7% (*n* = 11)	35.0% (*n* = 50)	27.3% (*n* = 39)	28.0% (*n* = 40)	2.1% (*n* = 3)
Choice of deployment date (*N* = 143)	8.4% (*n* = 12)	19.6% (*n* = 28)	34.3% (*n* = 49)	36.4% (*n* = 52)	1.4% (*n* = 2)
Choice about length of deployment (*N* = 143)	4.2% (*n* = 6)	21.7% (*n* = 31)	32.9% (*n* = 47)	41.3% (*n* = 59)	0
Choice about deployed job (*N* = 143)	5.6% (*n* = 8)	19.6% (*n* = 28)	29.4% (*n* = 42)	45.5% (*n* = 65)	0

Table 5 Description

Participants' attitudes about continuing careers in the military:

- 66.9% of nurses report that it is at least "likely" they will continue in the military.

- 23.3% of nurses reported that it is "unlikely," "very unlikely," or "extremely unlikely" they will continue in the military.
- 9.9% of nurses reported it is neither likely nor unlikely.

Table 5. Likelihood of continuing in the military

How likely is it that you will continue in the military? (*N* =142)	**Responses**
Extremely likely	32.4% (*n* = 46)
Very likely	17.6% (*n* = 25)
Likely	16.9% (*n* = 24)
Neither likely nor unlikely	9.9% (*n* = 14)
Unlikely	8.5% (*n* = 12)
Very unlikely	10.6% (*n* = 15)
Extremely unlikely	4.2% (*n* = 6)

Content Analysis of Written Comments

Twenty individuals from five different Air Force bases offered comments. Most of the comments either reiterated or elaborated on survey item responses. In some cases, new issues of deployment were contributed. A thematic analysis is described below.

Comments related to the negative aspects of deployment included the following topics: pre- and post-deployment leave, morale, support, and protection while deployed; the lack of mentorship; the frustration of caring for non-military patients; covering for deployed nurses; fitting in post-deployment; family stress; job fit on deployment; post-deployment mental health needs; too many people avoiding deployment; length of deployment; life disruptions; expenses associated with deployment; people with post-traumatic stress disorder; fear of reporting mental

health issues; lack of leadership support; additional duties from home base while deployed; lack of choices; and employer issues for reservists.

Ten of the 20 individuals who offered comments reported issues related to mental health that included stress, family stress, morale, and PTSD. Three individuals reported that they will remain in the military because they are close to retirement.

Positive comments related to pre-deployment training, opportunities for growth, working with sister services, deployment choices for reservists, training and experience both personal and professional.

Unique comments of interest included reports of people fearing career reprisals for seeking mental health services. Another individual said, "Even one random day off [while deployed] would have been such a treat." Overall, the comments reiterated the survey items and therefore provided additional content validity for the type of items included.

Methodology

a. Describe in sufficient detail to allow replication of work.

The first step in the study was completion of the IRB approvals for Florida State University, Keesler AFB, Travis AFB, Wilford Hall Medical Center, and the Uniformed Services University of the Health Sciences (USUHS). Other bases in the study accepted these approvals. In addition, a survey control number was required by the Air Force Survey Office that created a 6-month delay in the study. No distinction was made between "surveying" and "research sampling" by the Air Force Survey Office.

The next step in the process included confirming contacts at each base, notifying them of the study implementation plans, reiterating the study purpose/aims, and sharing IRB approvals. The contacts were asked for the best time (month and days) for the nurses to be surveyed.

Arrangements were made to collect data at each base. Contacts arranged the data collection room where subjects who volunteered would come to complete the survey. The information/consent form and survey were given to participants as they entered the room and the thank you letter was handed to them on exit. The base contact person posted subject recruitment flyers (approved by the IRBs) in strategic locations. Completed surveys were put in a large envelope in the data collection room and retrieved by the PI. Repeated visits were made to Keesler AFB, Eglin AFB, and Lackland AFB in an attempt to increase the sample size.

b. Framework.

This study proposed to discover the elements reported by nurses, related to their deployment experiences, that may later be part of a decision-making study that takes into account the myriad elements in retention decisions. These could include personality, prior life stress, coping, and life goals, among others. Kurt Lewin's Force Field Analysis model, although a classic, can suffice to demonstrate the relationship between elements or forces that relate to one's decision to remain in the military.

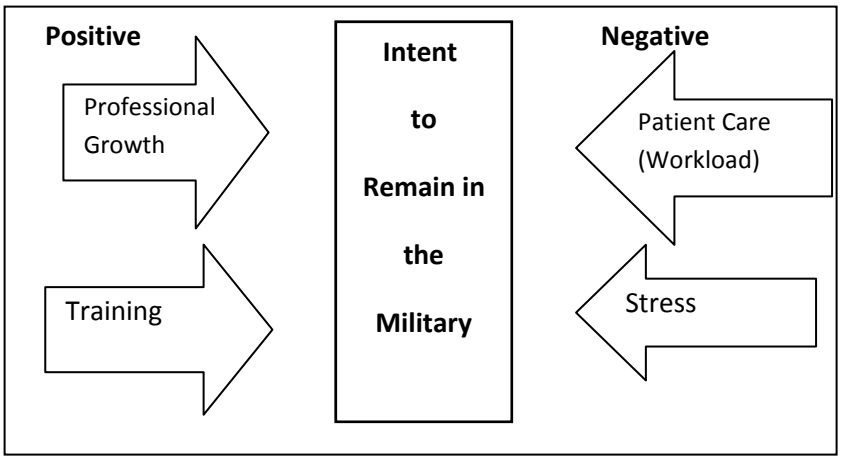
Kurt Lewin's Force Field Analysis Model

Kurt Lewin's Force Field Analysis model (Lewin, 1951) provided a useful framework for exploration of the impact of deployment on nursing retention. The Force Field Analysis Model (Figure 1) represents the forces that weigh on both positive and negative sides of a decision. The Force Field Analysis has been used in numerous studies and business decision making because of the balanced approach that theoretically guides the weighing of opposing factors on both sides of a decision or change.

The conclusion rests with the determination of the strength of positive impacts (factors) of deployment versus the negative impacts. This model fits the explorative nature of this study in that it allows identification of positive forces (factors with high positive scores) that may be strengthened and negative forces (factors with high negative scores) that may be mitigated through targeted retention strategies, providing the evidence for policies.

The force exerted by each positive or negative factor was quantified by the number of individuals selecting the factor items of the survey instrument. This weighting of force gives policymakers in the U.S. Air Force an understanding of the significance of each factor. Military policies that mitigate negative forces, and policies that protect or strengthen positive factors, can then be determined. Following the results of Lewin's Model, the changes that will best move retention toward the positive side can then be effected. The diagram below, Figure 2, represents the Force Field Analysis for this study.

Figure 2. Force Field Analysis showing factor categories



In this study the decision is "intent to stay in the military." The positive and negative forces were determined through a survey instrument designed as an outgrowth of the focus group findings and instrument development from the first phase of this research, funded in 2005. The proposed model development is based on data analysis and uses factoring to statistically define the forces, both positive and negative.

c. Design.

This study **design** was a descriptive, quantitative survey method. This study follows the instrument development project that was conducted in the "Impact of Deployment on Nurse Retention" study.

d. Sampling Plan: Inclusion, Exclusion Criteria.

Samples of Air Force nurses at each of the six bases listed below participated in the full implementation of this project. These samples are described below in the context of data

collection at each base. All individuals were volunteers. Although race data were not collected, several African American or Asian nurses participated.

This project recruited subjects, for a sample of 143 Air Force nurses who had been deployed within the last five years and volunteered to complete the survey.

Subject recruitment

Recruitment was piloted in phase 1 of this study and proved successful. Flyers on hospital units, announcements at key staff meetings, personal visits to the units, and extended availability in the data collection room (most of the entire day) made it convenient for nurses to be aware of the study and to participate. A repeat visit to the site (Wilford Hall Medical Center) with the largest number of nurses was conducted to allow for new nurses to rotate in and for additional nursees to return from deployments. Additional visits to Eglin AFB and Keesler AFB were also accomplished to capture nurses who had returned from deployment or were otherwise unavailable during the first data collection.

Air Force Bases for Data Collection

Air Force Base	Nurse Contact
Eglin Air Force Base	Lt Col Karen Weis USAF LTC Ryan, USAFR
Keesler Air Force Base	MAJ (sel) Michele Archebelle USAF
Lackland Air Force Base AD	Lt Col Wilson, USAF
Reserve Unit	Col Linkes USAFR
MacDill Air Force Base	Col Stepanowski USAFR
Andrews Air Force Base	Col Tynes USAF
Travis Air Force Base	LTC Elizabeth Bridges USAFR

The base contacts sent notices to each unit/clinic two weeks prior to the data collection date and flyers were posted in key locations announcing the data collection. On the data collection day, Dr. Ross greeted and consented nurses in a pre-arranged room that allowed

enough space between subjects for private responses to be made. Dr. Ross remained at the site for the entire day to allow nurses to return to their duty units and relieve others who might choose to participate. Subjects included active duty and reserve Air Force nurses who had been deployed within the last 5 years. Six Air Force bases were selected to represent a variety of base sizes, commands, and geographic regions. The contacts identified at each base facilitated data collection.

Shortfalls in the anticipated number of nurses at some bases occurred because of deployments (Lackland AFB and Eglin AFB); hospital closure (MacDill AFB); and post-deployment leaves, sick/convalescent absences, and vacation/leave. Some other shortfalls were related to the slowed re-opening of units at Keesler AFB hospital and fewer military nurses assigned than estimated at project inception. Col Weiss (SG Office Pentagon) was contacted in May 2010 and estimated the number of Air Force nurses to be currently 3,375. However, the exact number of those who were deployable (not pregnant, ill, on leave, or otherwise ineligible for deployment) was not known. The actual number of deployable nurses was the population for this study sample. That population number may be approximately 20% less than the total, or 2,700.

Justification of Sample

Active duty and reserve nurses who had been deployed at least once in the last 5 years were included. Nurses who had not recently deployed were excluded, because the nature of deployments has likely changed. Subjects were estimated to be between 20 and 60 years of age, the age range that encompasses the requirement for service.

Munro (2005) explains that power analysis is relevant for exploratory factor analysis. She indicated that a sample size of 100 to 200 is necessary and that it should, ideally, be large enough to provide at least 10 cases per variable.

The variables in this study were divided into two groupings (positive and negative effects). The positive impact group contained 12 variables and the second group of negative impact items contained 14 variables. The sample size (N = 143) meets the Munro study's criteria given that the factor analyses were run independently of these two groupings of items.

e. Recruitment/Tracking (see Table 1, below)

Data Analysis Table 1. Recruitment and Retention

If this does not apply to your study, check here X ☐

	Projected # from original proposal		Actual #	
# subjects available				
# subjects contacted				
# subjects screened				
# subjects refused				
# subjects consented				
Intervention/Control				
# subjects enrolled				
Intervention/Control				
# subjects dropped out				
Intervention/Control				
# subjects completed intervention				
Intervention/Control				

f. Description of Intervention, if applicable.

An intervention was not part of this study. The data collection consisted solely of a survey described in the following section.

g. Data Collection/Measurements.

The instrument for this study comes from the work completed in the first phase of this work (TSNRP proposal # N015-013, 2008). The survey instrument (Appendix A) was developed in a three-step process during the TSNRP study "Impact of Deployment for Military Nursing Retention." Step one consisted of active duty and reserve Air Force nurses and medical technician focus groups exploring the positive and negative impacts of deployment. This step was conducted at Eglin AFB and Lackland AFB with nurses and medical technicians who had recent deployment experience (after 2001).

The focus group answers were analyzed for content and combined with items extracted from the literature for use in the development of a structured instrument. Critique groups used a guideline form to examine the draft survey instrument and evaluated its feasibility, length, terminology, understanding, and format. Open-ended questions were included for additional comments. The consultant, Dr. Kim, reviewed the instrument at two intervals during its development and helped the research team with revisions.

RESULTS/DISCUSSION

Specific Aim 1

Research Question 1: What are the most common positive effects of deployment that influence Air Force nurses' intent to stay in the military?

Areas rated most positively were related to: Satisfaction from caring for troops, military pride and honor felt from serving, public support/respect, increased self-confidence, and the knowledge of working with other services.

Research Question 2: What are the most common negative effects of deployment that influence Air Force nurses' intent to stay in the military?

The most common negative consequences were related to expenses, benefits, promotions, the break from home/work responsibilities, being mentored, and opportunity in job assignment.

Research Question 3: What proportions of Air Force nurses, recently deployed, are considering or have made a decision on remaining in the military?

Although 67% of respondents (n = 95) plan to remain in the military, several offered written comments stating that they will remain to complete a short period for retirement. Of concern is the 23% (n = 33) who are likely to leave the service. Only one of the surveyed nurses did not express an opinion about remaining in the military.

Research Question 4: How do the positive and negative impacts compare between active duty and reserve nurses?

There was no significant difference in reserve and active duty nurses in terms of intent to remain in the military.

Specific Aim 2

Research Question 5: What deployment factors are part of a predictive model of Air Force nurses' intent to stay in the military?

The survey items were examined by factor analysis with a varimax rotation to maximize the factor loadings to two theoretically sound factors. The factor loadings represent the importance of each item to the factor, or conceptual subscale (Munro, 2005). Analysis of the impact survey items 1 to 4 (income, benefits, taxes, and expenses) were broken out as a financial scale. These items were not included in the factor analysis.

Factor 1 was identified as "Professional Growth" and consisted of 11 items. This factor represented a positive impact from deployment.

Table 6. Factor 1 (Professional Growth) factor items and factor loadings

Factor Items	Factor Loading
Desire to mentor others	.812
Chance to prove myself	.743
Honor to serve/military pride	.739
Learning military systems	.719
Support /respect from the public	.695
Respect for the clinical expertise of others	.684
Satisfaction from caring for troops	.677
Working with other services	.640

Travel/culture exposure	.573
Being a mentor	.560
Self-confidence	.543

Factor 2 was identified as “Training” and consisted of six items. This factor represented a positive impact from deployment.

Table 7. Factor 2 (Training) factor items and factor loadings

Factor Items	Factor Loadings
Skills training	.911
Medical skills	.904
Medical knowledge	.886
Decision making skills	.837
Leadership opportunities	.667
Being mentored	.599

A factor analysis of items rated as “problems” was conducted. In the second set of survey items, nurses rated items as to the severity they presented as a problem. Five items were eliminated from this section because they did not present factor loadings above .2 and were therefore not part of a distinct factor (Munro, 2005). The deleted items were: combat stress, language barriers, understanding chain of command, communication with home station, and guilt related to leaving deployed co-workers.

The resulting two identified factors were labeled “Patient Care” and “Stress”. A varimax rotation without a forced number of factors was used for factor 3 (Patient Care) and factor 4 (Stress). Factor 3 was identified as “Patient Care” and consisted of five items. This factor represented a negative impact or problem related to deployment.

Table 8. Factor 3 (Patient Care) factor items and factor loadings

Factor Items	Factor Loadings
Dealing with traumatic injuries	.891
Experiencing high number of causalities	.877
Stress of caring for so many young casualties	.852
Deployed workload	.772

Lack of time off at deployed site	.597

Factor 4 was identified as “Stress” and consisted of 4 items. This factor represents a negative impact or problem related to deployment.

Table 9. Factor 4 (Stress) factor items and factor loadings

Factor Items	Factor Loadings
Relationship on returning home with co-workers who did not deploy	.770
Stress on those left behind at work	.748
Job stress on return (catching up)	.703
Guilt about those left behind at home station	.660

Correlations between the factors 1 to 4 and the likelihood of remaining in the military are described in the table below.

Table 10. Correlations between survey factors and likelihood to remain in the military

		Professional Growth	Skill Training	Patient Care	Stress	Likely to Remain
Professional Growth	Pearson Correlation	1	.496*	–.141	–.043	–.012
	p (2-tailed)		.000	.094	.615	.889
	N	143	143	142	142	142
Training	Pearson Correlation	.496*	1	–.095	.082	–.005
	p (2-tailed)	.000		.263	.329	.951
	N	143	143	142	142	142
Patient Care	Pearson Correlation	–.141	–.095	1	.204**	–.489*
	p (2-tailed)	.094	.263		.015	.000
	N	142	142	142	141	141
Stress	Pearson Correlation	–.043	.082	.204*	1	–.223*
	p (2-tailed)	.615	.329	.015		.008
	N	142	142	141	142	141
Likely to Remain	Pearson Correlation	–.012	–.005	–.489*	–.223*	1
	p (2-tailed)	.889	.951	.000	.008	
	N	142	142	141	141	142

* Correlation is significant at the .01 level (2-tailed).
** Correlation is significant at the .05 level (2-tailed).

Survey factors that are significantly related to the likelihood to remain in the military are "Patient Care" and "Stress." The factor for "Patient Care" was negatively correlated with the likelihood to remain (r = –.489, p = .000, N = 141). "Patient Care" items within the factor were scored higher if the nurse perceived them at a greater problem level. Therefore, the more problematic the patient care was during deployment, the more likely the nurse is to leave the military. The "Stress" factor was also negatively correlated with intent to remain (r = –.223, p = .008, N = 141). Therefore, the greater the stress, the more likely the nurse is to leave the military. The other factors were not significantly correlated with intent to remain.

Research Question 6: What antecedent variables (e.g., age, rank, years of military service, gender, and deployment characteristics such as number and length of deployments) influence the model for the intent to stay in the military?

Number of children, years in the military, rank, and level of support were all negatively correlated with intent to stay in the military. Nurses are less likely to remain in the military if they have children (r = .19, n = 136, p = .05). The number of deployments was not significantly related to intent to remain in the military. However, the majority of respondents (80%, n = 114) had deployed no more than twice. As years in the military and rank increases, the likelihood to continue in the military also increases (r = 0.27, N = 142, p = .001). This analogy was reiterated in the written comments of those approaching retirement. Length of deployment was positively correlated with intent to stay in the military.

The significance of gender for the intent to remain in the military was evaluated with a t test. Males were more likely to report a higher level of intent to remain in the military (p = .26, df

= 140, *n* = 39). The perceived level of support for the nurses who deployed was positively correlated with intent to remain in the military (*r* = .19, n = 140, *p* = .05). Those receiving more support were more likely to remain.

In this study, the decision is "intent to stay in the military." The proposed model development is based on data analysis and used factoring to statistically define both positive and negative forces.

Specific Aim 3

Research Question 7: What recommendations related to deployment are expressed by Air Force nurses?

Air Force nurses identified needs for mental health services after deployment; a greater opportunity for debriefing and more choices related to deployment location, dates, length, and job. The expressed need for mental health services was reinforced by the ratings of items in the "Stress" factor as well as written comments.

Most nurses expressed a need for more than 14 months between deployments and a deployment length of 6 months or less.

a. Any other significant findings that may or may not have been anticipated.

Several nurses verbally expressed a sincere appreciation for having been asked about the impact of their deployment.

b. Figures and graphs constructed to stand alone, i.e., providing valid n*, with means and standard deviations.*

c. Statistical tests of significance, when appropriate.

Descriptive analysis was used to examine the items that were most negative and positive. Descriptive analysis was used to describe the proportions of recently deployed Air Force nurses who are considering or have made a decision on remaining in the military. A *t* test was used to determine if there was a difference in positive and negative impacts between active duty and reserve nurses. Exploratory factor analysis was used to develop deployment factors and Pearson's *r* was used to determine which factors predict an Air Force nurse's intent to stay in the military. Pearson's *r* was used to determine which antecedent variables (e.g., age, rank, years of military service, gender, and deployment characteristics such as number and length of deployments) influence the model for the intent to stay in the military. Content analysis was used to explore the written comments related to deployment that were expressed by Air Force nurses.

d. Relationship of results to specific aims (listed individually).

Specific Aim 1: Conduct a large-scale survey to examine the positive and negative impact of deployment on military nurses.

This study was designed to promote the stability of the military nursing corps by providing evidence to inform policy decisions. This was accomplished by conducting a survey of Air Force nurses to examine the positive and negative impacts of deployment. This study design was a descriptive, quantitative survey method. This study follows the instrument development project that was conducted in the "Impact of Deployment on Nurse Retention" study. The study methods consisted of a written survey. The sample consisted of 143 Air Force Active Duty and Reserve nurses who had deployed in the past 5 years from five different bases. The survey instrument for this study comes from the work completed in the first phase of this work (TSNRP

proposal # N015-013, 2008). Most of the variables used in this analysis were Likert-type items and scales.

Twenty individuals from five different Air Force bases offered comments that reiterated the survey items and therefore provided additional content validity for the type of items included.

Findings included many positive effects of deployment related to satisfaction from caring for troops, military pride and honor felt from serving, public support/respect, increased self-confidence, and the knowledge of working with other services. Many survey items were rated as positive (see Table 1). The most negative consequences were related to expenses, benefits, promotions, the break from home/work responsibilities, being mentored, and opportunities in job assignment. Nurses indicated a need for post-deployment debriefing and counseling.

Specific Aim 2: Model the interrelationships of positive and negative factors of deployment on military nursing satisfaction and intent to remain or leave military nursing careers.

Participants ranked the difficulties of the most recent deployment experience. Problematic items were identified as contributing to the lack of job satisfaction. Areas rated as most problematic were lack of time off at a deployed site, the stress of caring for so many young causalities, experiencing high numbers of causalities, dealing with traumatic injuries, and the deployed workload. Refer to Table 2 for further identification of problematic items.

Least problematic areas were: the guilt related to leaving deployed co-workers behind, foreign attitudes toward the United States, understanding the chain of command, guilt about those left behind at home station, and the relationship on return home with co-workers who did not deploy.

In terms of retention, most nurses (66.9%) reported that it is at least "likely" they will continue in the military. However, 23.3% reported that it is "unlikely," "very unlikely," or "extremely unlikely" they will continue in the military. In addition, 9.9% reported it is neither likely nor unlikely that they will continue in the military.

Written comments reiterated the survey item findings. Some nurses commented that they will remain in the military because they have a short period of time until retirement and if they had known they would need to deploy so much, they would not have joined. Others reiterated the positive outcomes of the deployment experience in terms of self-concept, nursing experience, and military pride.

Specific Aim 3: Synthesize evidence and provide recommendations for policy changes and incentives to improve retention of military nurses.

Policy changes and incentives for military nurses should be made in consideration of the positive and negative impacts of deployment. The findings of this study clearly indicate that these impacts influence the likelihood of remaining in the military.

Bowles and Bates (2010) described the need for resilience in military members to address the adverse consequences of multiple deployments. The stress on nurses with children and those with limited support during deployment was documented in this study as a contributor to the likelihood of leaving the military. Lang, Pfister, and Siemens (2010) studied 364 nursing personnel in a large Army hospital and found that Army nurses experienced statistically greater levels of emotional exhaustion as compared to civilian nurses. Their findings related to the association between burnout and longer duty hours corresponds to the findings of this study that describe the negative impacts of long work days and little or no time off during deployments.

Policies for deployment that include allowing for a “down day” or day off once every two weeks would address the expressed needs in this study. A work break could also address the stresses identified as well as the burnout related to compassion fatigue described by Stewart (2009). The lack of choices related to deployments, the actual stresses of deployment, and the compounding burdens of life interruptions and child care responsibilities for military nurses may also be mitigated by expanded mental health services on their return.

Policy changes that might augment the positive impacts of deployment could include coaching senior nurses on the utility of career counseling for nurses on the benefits unique to deployment. Recruitment materials for military nursing should also include the positive aspects of training, honor, self-concept, and professional growth the nurses describe as related directly to their deployment experiences.

Limitations of study

This study was limited to volunteer participants who were Air Force active duty or reserve military medical personnel.

CONCLUSION AND IMPLICATION

a. Summary of results with emphasis on importance and/or implications of completed research.

A survey instrument was used to identify factors that contribute to important and costly decisions which will affect the retention of nurses in the military. This survey provides a comprehensive look at the multitude of factors nurses themselves have expressed as important to the impact of deployments on their personal lives and professional careers.

Poole, K (2010) described wartime experiences for nurses as both mentally and physically exhausting and extremely rewarding. Nurses in this survey clearly indicated the outcomes of their deployment experience in much the same way. Positive outcomes in training, professional aspects, self-confidence, and honor were evident. It is doubtful that these gains could have been reached in experiences other than deployment.

b. Suggestions for future research to better address the research topic.

This survey instrument could be used with military forces in the U.S. Army and U.S. Navy, as well as forces outside the medical arena, for comparison of positive and negative impact factors. A larger sample would also allow for survey item confirmatory factor analysis.

Further research is recommended with different retention strategies. There is a need for comparison of the effects of enhanced family communications with deployed personnel or the retention effect of shorter deployments. Policy decisions need to be evidence-based, and this study contributes to the feasibility of obtaining such evidence. Implementing a policy of deployments restricted to 9 months, or a new policy of instituting a break every 6 months, may

improve medical personnel retention. The combined effect of war stresses and extended workload and hours warrants further study.

The impact of deployment could be re-evaluated using this survey instrument at intervals to discern the policy implications as changes are made.

Research with a larger sample is recommended. Samples that include Army and Navy nurses would be critical to a complete understanding of the topic.

SIGNIFICANCE OF RESEARCH TO MILITARY NURSING

Public, private, and veteran's health care facilities are currently experiencing a significant shortage of nurses that is mirrored in the military. Nurses are being actively recruited from one civilian hospital to another through bonuses and special incentives. Military retention must, to some extent, actively compete with these public and private facilities because military nurses are exposed to the marketing of civilian agencies. This imperative for action must be immediate and sustained to meet the needs of military nursing retention. As Kenny and Hull (2008) described the consequences of compassion fatigue in health care providers, the risk of losing military nurses to the force of negative consequences that come from caring for large numbers of young casualties also is evident in this study. Only through the exploration of the factors with a major impact on individuals, their careers, the military family, and family economics, can effective retention of military nurses be assured. The use of a valid and reliable instrument that can be used over time could be critical to understanding the evidence, issues, and trends affecting military nurse retention.

On the basis of a clear understanding of the possible implications of deployment, more effective, efficient, and cost-saving processes may be determined that will enhance the positive outcomes of deployment and at the same time, mitigate the negative impacts. Retention may be significantly improved with a definitive analysis of these factors and suggested strategies. In addition, policies related to retention can be targeted to defined issues for the most efficient use of resources.

Establishing an evidence base for policy decisions related to Air Force nurse retention may likely prove beneficial for other services as well. In addition, understanding the positive

factors associated with deployment may provide military leaders with a unique opportunity to advertise those positive factors as recruiting strategies. For example, in the pilot testing of the instrument development study, nursing skills, leadership opportunities, and professional advancement were a few of the positive impacts of deployment identified by nurses. These points of satisfaction could be emphasized in military recruitment and the periodic counseling of nurses.

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OUTCOMES RESULTING FROM STUDY

Publications

- None at this time

Abstracts or Other Materials

- None at this time

Presentations

- None at this time

Seminars, Invited Lectures, Workshops, etc. None at this time

Patents, Licenses, etc. None at this time

Changes in Practice resulting from findings of study: None

Changes in Policy resulting from findings of study: None at this time

Press Coverage None at this time

APPENDIX A: FINAL BUDGET REPORT

CATEGORY	ORIGINAL AWARD	REALLOCATIONS	EXPENSED AT END OF STUDY	REMAINING AMOUNT
Personnel	$146,866	0	$154,660	–$7,793
Consultant	6,000	0	6,000	0
Equipment	0	0	0	0
Supplies	3,350	0	2,263	1,087
Travel	10,775	0	3,236	7,539
Patient Care Costs	0	0	0	0
Other Expenses	0	0	0	0
TOTAL	$166,991	0	$166,158	$883

Discussion: Dollar amounts reflect only direct costs. Indirect costs on original award totaled $78,485. Indirect costs expensed at end of study total 78,094.

Final Budget Report from Florida State University is attached to Final Report

APPENDIX B: PROBLEMS ENCOUNTERED, RESOLUTIONS

The problems encountered in this study were primarily related to institutional board review, Air Force Survey Office approval, and changes in the availability of subjects.

Institutional review board changes at several bases led to confusion about which facilities would accept the review by Wilford Hall and who needed a unique application. Each base used its own unique form. Some bases required full review even though the study was exempt because it involved anonymous data from volunteers without significant risk.

In the process of IRB approvals for each base, Travis AFB hospital officials notified the PI that an approval by the Air Force Survey Office was required. The Survey Approval required a Pentagon-level sponsor and delayed the study by 8 months.

Shortfalls in the anticipated number of nurses at some bases occurred because of deployments (Lackland AFB and Eglin AFB); hospital closure (MacDill AFB); and post-deployment leaves, sick/convalescent absences, and vacation/leave. MacDill AFB Reserve unit had also downsized from nearly 300 personnel to f than 20 nurses, of which only 6 had deployed. Some other shortfalls were related to the delayed re-opening of units at Keesler AFB hospital and fewer military nurses assigned than estimated at project inception. Col Weiss (SG Office Pentagon) was contacted in May 2010 and estimated that the number of Air Force nurses to be currently 3,375. However, the exact number of those who were deployable (not pregnant, ill, on leave, or otherwise ineligible for deployment) was not known. The actual number of deployable nurses was the population for this study sample. That population number may be approximately 20% less than the total, or 2,700. Deployment and changes of the identified contact nurses at each base also created brief delays.

APPENDIX C: IMPACT OF DEPLOYMENT SURVEY

Thank you for supporting nursing research by participating in this anonymous survey.
If you have been mobilized in the last 5 years, please complete the following:

Rank: _____ Years in the military: _____ Gender: ( ) Female ( ) Male
How many children currently live with you? _____

How many times have you deployed since September 11, 2001? _____
How many of these deployments were overseas? _____
What was the length of your most recent deployment? _____ months

Which of the following do you have substantial responsibility for?
___ Children ___ Pets and animals ___ Personal business
___ Elderly parents ___ Other Please specify: _____

Are you a member of the Reserve or National Guard forces? ____Yes ____ No

---

Please answer the following questions about your MOST RECENT deployment experience.

Please rank your level of support during deployment from friends, family, significant others.

( ) Very weak ( ) Weak ( ) O.K. ( ) Strong ( ) Very strong

Please check any of the following that were interrupted due to deployment:

___ Professional military education ___ College or other courses ___ Other _____

What impact do you believe your most recent deployment had on the following?		***Very positive impact***	***Somewhat positive impact***	***No impact***	***Somewhat negative impact***	***Very negative impact***
1	Income	❑	❑	❑	❑	❑
2	Benefits(insurance, healthcare)	❑	❑	❑	❑	❑
3	Taxes	❑	❑	❑	❑	❑
4	Expenses	❑	❑	❑	❑	❑
5	Leadership Opportunities	❑	❑	❑	❑	❑
6	Skills training	❑	❑	❑	❑	❑
7	Medical skills	❑	❑	❑	❑	❑
8	Medical knowledge	❑	❑	❑	❑	❑
9	Decision making skills	❑	❑	❑	❑	❑

What impact do you believe your most recent deployment had on the following?		*Very positive impact*	*Somewhat positive impact*	*No impact*	*Somewhat negative impact*	*Very negative impact*
10	Working with other services	❑	❑	❑	❑	❑
11	Learning military systems	❑	❑	❑	❑	❑
12	Being a mentor	❑	❑	❑	❑	❑
13	Being mentored	❑	❑	❑	❑	❑
14	Opportunity in job assignment	❑	❑	❑	❑	❑

Please answer the following questions about your MOST RECENT deployment experience

What impact do you believe your most recent deployment had on the following?		*Very positive impact*	*Somewhat positive impact*	*No impact?*	*Somewhat negative impact*	*Very negative impact*
1	Travel/cultural exposure	❑	❑	❑	❑	❑
2	Honor to serve/military pride	❑	❑	❑	❑	❑
4	Support/respect from the public	❑	❑	❑	❑	❑
5	Satisfaction from caring for troops	❑	❑	❑	❑	❑
6	Self-confidence	❑	❑	❑	❑	❑
7	Chance to prove myself	❑	❑	❑	❑	❑
8	Desire to mentor others	❑	❑	❑	❑	❑
9	Respect for the clinical expertise of others	❑	❑	❑	❑	❑
10	Break from home/work responsibilities	❑	❑	❑	❑	❑
11	Performance Evaluations	❑	❑	❑	❑	❑
12	Awards & decorations	❑	❑	❑	❑	❑
13	Promotions	❑	❑	❑	❑	❑

Please answer the following questions about your MOST RECENT deployment experience

Please rate the following in terms of your most recent deployment.		*Not a problem*	*Somewhat a problem*	*Very much a problem*	*Extreme problem*	*N/A*
1	Language Barriers	❑	❑	❑	❑	❑
2	Stress related combat risk	❑	❑	❑	❑	❑
3	Combat stress	❑	❑	❑	❑	❑
4	Carrying a weapon	❑	❑	❑	❑	❑
5	Lack of time off at deployed site	❑	❑	❑	❑	❑

Please answer the following questions about your MOST RECENT deployment experience						
Please rate the following in terms of your most recent deployment		***Not a problem***	***Somewhat a problem***	***Very much a problem***	***Extreme problem***	***N/A***
6	Deployed workload	❑ 5	❑ 4	❑ 3	❑ 2	❑ 1
7	Understanding chain of command	❑	❑	❑	❑	❑
8	Uncertainty about travel home	❑	❑	❑	❑	❑
9	Difficulties in the process of traveling home	❑	❑	❑	❑	❑
10	Relationship on return home, with co-workers who did not deploy	❑	❑	❑	❑	❑
11	Job stress on return (catching up)	❑	❑	❑	❑	❑
12	Stress on those left behind at work	❑	❑	❑	❑	❑
13	Communication with command at home station	❑	❑	❑	❑	❑
14	Guilt about those left behind at home station	❑	❑	❑	❑	❑
15	Length of deployment	❑	❑	❑	❑	❑
16	Lack of choices about deployment	❑	❑	❑	❑	❑
17	Match of background to deployed role	❑	❑	❑	❑	❑
18	Adjustment to post-deployment job	❑	❑	❑	❑	❑
19	Adjustment to returning to home	❑	❑	❑	❑	❑
20	Marriage/relationship stress	❑	❑	❑	❑	❑
21	Guilt related to leaving deployed co-workers at overseas location	❑	❑	❑	❑	❑
23	Foreign attitudes toward US	❑	❑	❑	❑	❑
24	Terrorist threats	❑	❑	❑	❑	❑
25	Stress of caring for so many young casualties	❑	❑	❑	❑	❑
26	Experiencing high number of casualties	❑	❑	❑	❑	❑
27	Dealing with traumatic injuries	❑	❑	❑	❑	❑

Speaking only for yourself, please answer the following questions:

What do you think is the ideal length for an overseas deployment? _____ months
What do you feel is the ideal minimum time **between** overseas deployments? _____ months

How would you rank your opportunity for post deployment psychological counseling:
(1.) No opportunity (2.) Minimal (3.) Sufficient (4.) Excellent
How would you rank your opportunity to de-brief your deployed mission experience?

(1.) No opportunity (2.) Minimal (3.) Sufficient (4.) Excellent

In terms of overseas deployment, how important are each of the following?

	Not important	Somewhat important	Very important	Extremely important	No opinion
Choice of deployed location	❑	❑	❑	❑	❑
Choice of deployment date	❑	❑	❑	❑	❑
Choice about length of deployment	❑	❑	❑	❑	❑
Choice about deployed job	❑	❑	❑	❑	❑

How likely is it that you will continue to pursue a military career?

Extremely likely	Very likely	likely	Neither likely nor unlikely	unlikely	Very unlikely	Extremely unlikely
1	2	3	4	5	6	7

Comments:

This survey is being conducted as part of a TriService Nursing Research Program grant “Impact of Deployment on Nursing Retention: Completion Phase,” Grant # HU0001-08-1-TS14; Principal Investigator Col (ret) Mary Candice Ross. Questions may be directed to her at (850) 766-7161 or the Institutional Review Board of the Florida State University.

APPENDIX D

Psychometric Report

Reliability and Validity of Measures

If no instrumentation was used for your study, check here ☐

Directions: Please complete the questions below addressing demographic characteristics of your sample and overall sample size. For the tool identified in the attached cover letter, please complete the following questions regarding any reliability and/or validity testing you performed. Please note that this list is not meant to be exhaustive. If you performed other reliability and/or validity testing which is not listed, please identify the test, and report your findings under "other." If further space is needed, please attach additional pages. Please submit a copy of the tool if you made any modifications.

Principal Investigator – Contact Information

Name:	[redacted]	**Telephone**	[redacted]	**Work**
Address:	[redacted]	**Number:**	[redacted]	**Home**
	[redacted]	**E-mail:**	[redacted]	
Title of Study	Impact of Deployment on AF Nursing Retention: Completion Phase			

Demographic Characteristics of Sample

Total sample size:		**Age Range:**	**21-60**			**Number**	**Service**
	<19 yrs	19-60 yrs	>60 yrs	Other			Army
Male		**39**				143	Air Force
Female		**104**					Navy
							Marine

Number	**Race: Data not collected**			**Number**	**Service Component:**
	Caucasian	65% estimated			Active Duty
	African-American	20% estimated			Retired
	Hispanic	10% est			Reserve
	Asian/Pacific Islander	5% est			National Guard
	Other (Describe)				Dependent

Briefly describe defining characteristics of sample:

143 Air Force Active Duty and Reserve nurses who had deployed in the past 5 years from five different bases. Only one respondent deployed CONUS only. The majority (104) were female. The average number of years in the military was 13.6.

17.4% (N = 24) were Reserve or National Guard and 82.6% (N =- 114) were Active Duty (3.5% missing).

Instrument Reference			
Instrument Title:	**Impact of Deployment**	**Number of Scales:**	**4 factors**
Instrument Publication Year:	**N/A Developed in as study completed in 2007**	**Edition:**	**1st**

Authors:	**Mary C. Ross**				
Publisher:	**N/A**				
Journal or Book Title:					
Year:		**Volume:**		**Page Numbers:**	
Tool Modifications					
Did you modify this tool?	☐ **Yes (Answer A & B below)**		**X No**		
A. Briefly describe why modifications were made:					
B. Describe what modifications were made (attach page if additional space is needed):	**No modifications have been made since instrument development in the previous TSNRP study.**				
Directions: Please indicate any reliability and/or validity testing you did on this instrument. Please report findings of each scale next to the test.					
Check all that apply					

Reliability		**Validity**
☐ Internal-Consistency Reliability		Content Validity
☐ Cronbach Coefficient Alpha		☐ Index of Content Validity (CVI)
☐ Kuder- Richardson (KR-20)		☐Other (please describe on back of form)
☐ Interrator Reliability		Criterion-Validity
☐ Intrarater Reliability		☐ Predictive
☐ Coefficient of Stability (test-retest)		☐ Linear Correlation
☐ Coefficient of Equivalence		Name of Criterion Measure Used:
☐ Other (please describe on back of form)		☐ Concurrent
		☐Linear Correlation
Reliability of Individual Scales		Name of Criterion Measure Used:
Scale Name (Factors portion of survey)	**Reliability**	☐ Construct Validity (include a copy of findings)
Professional Growth		☐ Multitrait-Multimethod
Training		☐ Hypothesis testing
Patient Care		☐ Contrasted Group
Stress		X Factor Analysis
		X Exploratory
		☐ Confirmatory
Please use back of form for additional scales		☐ Other (please describe on back of from)
Evaluation of Measure: Factor constructs matched the finding in the previous instrument development phase and the written comments during this present study.		
Would you recommend the use of this measure in your population to other researchers? Yes.		
X Yes. Please explain why.	**This survey measures both positive and negative consequences of deployment and has direct implications for policy making related to retention. The survey has only been used with Air Force nurses and needs testing with other services to obtain large sample sizes.**	

☐ No Please explain why.	

Reliability for Subscales for Impact of Deployment Instrument.

Subscale	# Items	Mean Score*	# Valid Cases	Cronbach's Alpha
Financial Issues	4	1.73	70	.65
Professional Skills	10	1.93	70	.88
Personal Growth	12	1.91	70	.86
Deployment Stress	12	1.90	70	.75
Links with Home	14	1.83	70	.78
Deployment Choices	4	2.82	70	.79

Likert scores were 1-5 (1 = very positive impact; 2 = Somewhat positive impact; 3 = No impact; 4 = Somewhat negative impact; 5 = Very negative impact)

Validity was established for content using a panel of 10 experts who evaluated each item, as well as the scope and presentation of the instrument. This expert panel of military and academic nurse researchers, both external and internal to the project, was used to assess the content and construct validity of the draft. Content validity was supported through the use of an instrument generated from the contents of focus groups. It was supplemented with themes extracted from the literature via systematic methods previously described. Finally, it was examined by the content experts associated with the project in Phase 1 and by the panel of experts in Phase 2.

APPENDIX E

Research Categorization Using TSNRP Areas of Research

Identify the main research priority investigated in this research study.
Please check one item for Primary (Required) and one item for Secondary Priority Areas (if appropriate)

Primary Research Priority Area: (Required)

___ Military Deployment Health

___ Translating Knowledge & Research Findings into Practice in a Military Context

___ Evidence Based Practice

_X_ Recruitment & Retention of the Military Nursing Workforce

___ Developing & Sustaining Military Nursing Competencies

Secondary Research Priority Area:

___ Military Deployment Health

___ Translating Knowledge & Research Findings into Practice in a Military

___ Evidence Based Practice

_X_ Recruitment & Retention of the Military Nursing Workforce

___ Developing & Sustaining Military Nursing Competencies

Other *(fill in)* _____

Identify 3-5 key words relating to the proposal. (Required)
(You MUST use the *CRISP Thesaurus* for key words. The thesaurus is on the web at:
http://crisp.cit.nih.gov/crisp/crisp_help.help

1. Nursing personnel
2. War
3. Military personnel

APPENDIX F

Articles of Presentations

Do you have any articles or presentations 'in press' ☐ **yes** **X**☐ **no**

If yes, provide copies and all PAO clearance information. All citations listed must be in APA format.

APPENDIX G: PUBLIC AFFAIRS OFFICE CLEARANCES

NONE

REQUEST FOR ADVANCE OR REIMBURSEMENT (see instructions)	Approved by Office of Management and Budget, No. 80-R0183	Page 1	of 1 pages
	1. TYPE OF PAYMENT REQUESTED	a. "X" one, or both boxes: ADVANCE REIMBURSEMENT X	2. BASIS OF REQUEST: CASH ACCRUAL X
		b. "X" the applicable box: FINAL PARTIAL X	
3. FEDERAL SPONSORING AGENCY AND ORGANIZATIONAL ELEMENT TO WHICH THIS REPORT IS SUBMITTED: Uniformed Svcs Univ of Hlth Sci		4. FEDERAL GRANT OR OTHER IDENTIFYING NUMBER ASSIGNED BY FEDERAL AGENCY: HU0001-08-1-TS14	5. PARTIAL PAYMENT REQUEST NUMBER FOR THIS REQUEST: T-00090357 18
6. EMPLOYER IDENTIFICATION NUMBER: 591961248	7. RECIPIENT'S ACCOUNT NUMBER OR IDENTIFYING NUMBER: 0000017073	8. PERIOD COVERED BY THIS REQUEST: FROM (month, day, year): 08/01/2010	TO (month, day, year): 08/31/2010
9. RECIPIENT ORGANIZATION: Sponsored Research Accounting Services Florida State University 874 Traditions Way P.O. Box 3064166 Tallahassee, FL 32306-4166		10. PAYEE (Where check is to be sent if different than item 9)	

11. COMPUTATION OF AMOUNT OF REIMBURSEMENT/ADVANCES REQUESTED

PROGRAMS/FUNCTIONS/ACTIVITIES	(a)	(b)	(c)	TOTAL
~~(As of Date)~~ a. Total program outlays to date	$ 244,252.49	$	$	$ 244,252.49
b. Less: Cumulative program income	0.00			0.00
c. Net program outlays (Line a minus line b)	244,252.49			244,252.49
d. Estimated net cash outlays for advance period	0.00			0.00
e. Total (Sum of lines c & d)	244,252.49			244,252.49
f. Non-Federal share of amount on line e	0.00			0.00
g. Federal share of amount on line e	244,252.49			244,252.49
h. Federal payments previously requested	244,242.04			244,242.04
i. Federal share now requested (Line g minus line h)	10.45			10.45
j. Advances required by month, when requested by Federal grantor agency for use in making prescheduled advances — 1st month				
2nd month				
3rd month				

12. ALTERNATIVE COMPUTATION FOR ADVANCES ONLY

a. Estimated Federal cash outlays that will be made during period covered by the advance	
b. Less: Estimated balance of Federal cash on hand as of beginning of advance period	
c. Amount requested (Line a minus line b)	

13. CERTIFICATION

I certify that to the best of my knowledge and belief the data above are correct and that all outlays were made in accordance with the grant conditions or other agreements and that payment is due and has not been previously requested.	SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL	DATE REQUEST SUBMITTED: 09/02/2010
	TYPED OR PRINTED NAME AND TITLE: Peter Derham	Phone (Area Code, No., Ext.): 850/644-8672